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| EXAMINER | |
|---|---|
| BRAINARD, TIMOTHY A | |
| **ART UNIT** | **PAPER NUMBER** |
| 3662 | |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/574,632 | HIPP, JOHANN |
| | Examiner | Art Unit |
| | TIMOTHY A. BRAINARD | 3662 |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on _3/2/2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) _33-64_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _33-64_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 April 2006_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 40, 41, 43 and 59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claims 40, 41, 43, 59, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 33, 35-38, 43, 46-47, 55-56, 58-60, and 63-64 are rejected under 35 U.S.C. 103 (a) as being unpatentable over **Lewis** et al (US 2004/0075823) in view of **Ogawa** et al (US 2002/0145725). **Lewis** teaches (claim 33, 55, 63, and 64) a method of distance measurement comprising transmitting pulsed electromagnetic radiation using one transmitter, detecting reflected signal pulses

using one receiver, measuring distances from objects at which the transmitted radiation pulses are reflected by determining a pulse propagation time (abs), measuring noise using the receiver with specific points in time being determined at which at least one threshold of the receiver lying in the noise is passed through and with changes in noise caused by the signal pulses being detected by adding a plurality of individual measurements respectively including specific points in time to thereby identify the reflected signal pulses (abs), (claim 35 and 60) generating and averaging of individual measurements and the detection of the changes in the nose take place by means of a software-aided evaluation method (para 18), (claim 36 and 56) a sequence of logical pulses is generated by means of the threshold of the receiver lying in the noise from the analog received signal containing the noise pulses and/or noise pulses changed by the signal pulses with the individual measurement being derived from the sequence, (claim 37) the flanks of the logical are used as points in time of the individual measurement (para 15), (claim 38) the individual measurements are introduced into at least one memory (para 85), (claim 43, 58, and 59) a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below, with preferably a point in time of an exceeding being evaluated as positive and a point in time of a falling below being evaluated negatively, or vice versa (para 15), (claim 46) a detection threshold is applied to the amplitude function for the detection of the changes in the noise cause by the signal pulse (para 15), (claim

47) the respective associated object distance is determined in the amplitude function for the signal on the basis of at least one point in time at which the detection threshold is passed through (para 15), (claim 63) a sequence of logical pulses (23) is generated by means of the threshold (21) of the receiver (17) lying in the noise from the analog received signal (37) containing the noise pulses and/or noise pulses changed by the signal pulses (15), with the individual measurement being derived from this sequence (para 15). **Lewis** does not teach using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below. **Ogawa** teaches using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below (fig 8 and para 50). It would have been obvious to modify **Lewis** to include using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below because it is one of multiple design choices with no new or unexpected results.

While **Lewis** in view of **Ogawa** does not teach averaging a plurality of individual measurements of the noise at specific points it would have been obvious to divide the number of counts bit the number of measurements taken because it is one of multiple methods to determine where the timing of the reflection with no new or unexpected results.

6. Claims 33-34, 36-47, 50-59, and 61-64 are rejected under 35 U.S.C. 103 (a) as being unpatentable over **Lai** et al (US 2003/0035097) in view of **Ogawa**. **Lai** teaches (claim 33 55, 63, and 64) a method of distance measurement comprising transmitting pulsed electromagnetic radiation using one transmitter, detecting reflected signal pulses using one receiver, measuring distances from objects at which the transmitted radiation pulses are reflected by determining a pulse propagation time, measuring noise using the receiver with specific points in time being determined at which at least one threshold of the receiver lying in the noise is passed through and with changes in noise caused by the signal pulses being detected by adding a plurality of individual measurements respectively including specific points in time (para 19-23), (claim 34) an individual measurement is generated for each transmitted pulse (para 28-32), (claim 36 and 56) a sequence of logical pulses is generated by means of the threshold of the receiver lying in the noise from the analog received signal containing the noise pulses and/or noise pulses changed by the signal pulses with the individual measurement being derived from the sequence (para 23), (claim 37) the flanks of the logical are used as points in time of the individual measurement (para 23), (claim 38) the

individual measurements are introduced into at least one memory (para 23), (claim 39 and 61) the points in time of the individual measurement are first intermediately stored in a memory, in particular in a memory of an IC component, and are subsequently transferred to a further memory, in particular to a time pattern memory, with the points in time being stored in the further memory in an arrangement taking their respective time information into account (para 28-32), (claim 40 and 62) the averaging of the individual measurements is carried out in at least one time pattern memory, with the same time pattern memory preferably being used for all individual measurements to be averaged and with the corresponding memory cell of the time pattern memory being increased by a value n in the case of a rising pulse flank and being reduced by the value n in the case of a falling flank, or vice versa, with the value 1 preferably being used for n (para 31-33), (claim 41) a time pattern is used in the averaging of the individual measurements in which the measurement time is divided into a plurality of sequential time windows, with one memory cell of at least one time pattern memory (fig 4 and 5), (claim 42) the number of passing through of the threshold of the receiver is counted (para 28-32), (claim 43, 58, and 59) a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below, with preferably a point in time of an exceeding being evaluated as positive and a point in time of a falling below being evaluated negatively, or vice versa (para 28-32 and fig 4 and 5), (claim 44) the average value is integrated into

an amplitude function subsequent to the averaging of the individual measurements (fig 5), (claim 45) the bandwidth of the amplitude function is reduced in that averaging is preferably carried out in the amplitude function in each case over a predetermined number of sequential time windows (fig 5 and para 32), (claim 46) a detection threshold is applied to the amplitude function for the detection of the changes in the noise cause by the signal pulse (para 19-23), (claim 47) the respective associated object distance is determined in the amplitude function for the signal on the basis of at least one point in time at which the detection threshold is passed through (fig 4), (claim 50) the amplitude function for the determination of nadirs of the signal pulses, in each case in the region of the rising flank and/or falling flank of the signal pulse, an extrapolation of the noise is carried out, a noise function obtained in this process is deducted from the amplitude function and the point of intersection of the interpolated pulse flank with the average value of the noise is determined as the nadir, with the object distances being determined on the basis of the nadirs, (claim 51) a shape of the signal pulses is evaluated in the amplitude function, (claim 52) the averaging of the individual measurements takes place packet-wise in that a summing is carried out sequentially in each case via a number of single individual measurements and a division is made by the number of individual measurements for the formation of packet average values, (claim 53) the object distances are determined from a single packet average value, (claim 54) averaging is carried out over a plurality of packets and the object distances are

determined from the average value hereby formed (fig 4 and 5 and para 28-32), (claim 57) a clock for the emission of cycle pulses of a known width with a known frequency and a counter with which the cycle pulses emitted during a time period are provided for the determination of time periods which respectively pass from the transmission of a radiation pulse up to a point in time corresponding to a flank of a logical pulse (fig 5 and para 28-32) (claim 63) a sequence of logical pulses (23) is generated by means of the threshold (21) of the receiver (17) lying in the noise from the analog received signal (37) containing the noise pulses and/or noise pulses changed by the signal pulses (15), with the individual measurement being derived from this sequence (fig 2 and para 21). **Lai** does not teach using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below. **Ogawa** teaches using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below (fig 8 and para 50). It would have been obvious to modify **Lai** to include using only points in time when the noise is passed through the threshold, the flanks of logical pulse are used as points in time of the individual measurement, a distinction is made in the

averaging between points in time at which the threshold of the receiver is exceeded and points in time at which the threshold of the receiver is fallen below because it is one of multiple design choices with no new or unexpected results. While **Lai** in view of **Ogawa** does not teach averaging a plurality of individual measurements of the noise at specific points it would have been obvious to divide the number of counts bit the number of measurements taken because it is one of multiple methods to determine where the timing of the reflection with no new or unexpected results.

7. Claims 35 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lai** in view of **Ogawa** as applied to claims 33 and 55 above, and further in view of **Lewis**. **Lewis** teaches generating and averaging of the individual measurements and the detection of the changes in the noise take place by means of a software-aided evaluation (para 18). It would have been obvious to modify **Lai** in view of **Ogawa** to include generating and averaging of the individual measurements and the detection of the changes in the noise take place by means of a software-aided evaluation because it is one of multiple methods to perform the operation with no new or unexpected results.
8. Claims 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lai** in view of **Ogawa**. **Lai** in view of **Ogawa** does not teach the detection threshold is set in dependence on a factor by which the threshold of the receiver is reduced with respect to a value of 4.5 NEP and the detection threshold is calculated from a calculation specification containing the factor. It is expected

that one skilled in the art would have set the threshold at 4.5 NEP because it is one of multiple tolerance to set the threshold with no new or unexpected result

***Response to Arguments***

9. Applicant's arguments filed 3/2/2009 have been fully considered but they are not persuasive. Applicant argues

10. 1) the claims clearly define not only that the reflected pulse is below the noise level, but that the noise level, which also contains the desired reflection pulse, is measured only at specific points of time determined at which at least one threshold of the receiver line in the noise is passed through and a plurality of individual measurements at the specific points of time 33 are determined to identify the reflected signal pulse.

11. Response: Ogawa teaches measuring if signal strength is above a threshold at specific points in time and adding multiple measurements together. Lai and Lewis teach taking only the measurements when the threshold has been crossed. It would have been obvious to adding the measurements that cross the threshold together in the same manner that is done in Ogawa.

12. 2) There is absolutely no suggestion in the Ogawa patent of measuring the noise only at specific points in time at which at least one threshold of the receiver lying in the noise is passed through.

13. Ogawa teaches a threshold lying the noise and Lai and Lewis teach using only measurement only when the threshold is passed through

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY A. BRAINARD whose telephone number is (571) 272-2132. The examiner can normally be reached on Monday - Friday 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TAB

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662